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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/729,125	12/05/2003	David M. Klingbeil	03-303	9021

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EXAMINER

NGUYEN, TU MINH

ART UNIT

PAPER NUMBER

3748

DATE MAILED: 06/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/729,125

Applicant(s)

KLINGBEIL ET AL.

Examiner

Tu M. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 6, 7 and 9-21 is/are rejected.
- 7) ☒ Claim(s) 4, 5 and 8 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 030404.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Objections

1. Claims 1, 10, and 11 are objected to because
 - Claim 1, line 21 of the claim, "threshold." should read --threshold;--. And line 25 of the claim, "threshold;" should read --threshold.--.
 - Claims 10-11, "temperature threshold" should read --threshold temperature--.Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office Action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 17-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Araki (U.S. Patent 5,711,149).

Re claim 17, as shown in Figures 1 and 3, Araki discloses a method for regenerating a particulate filter, comprising:

- determining a first temperature (T_{in}) corresponding to a catalyst (5) that is thermally coupled with a particulate filter (4);

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- determining a second temperature (Ta) corresponding to the temperature of the particulate filter (step 108);

- performing closed loop control of the second temperature when the first temperature (Tin) is above a first threshold (T1) (steps 103 with YES answer, 107, and 109-11).

Re claims 18-19, in the method of Araki, performing closed loop control of the second temperature comprises controlling the second temperature (Ta) to substantially a predetermined temperature (T2), wherein the predetermined temperature comprises a temperature operable to regenerate the particulate filter.

Re claims 20-21, in the method of Araki, performing closed loop control of the second temperature comprises controlling the second temperature (Ta) to substantially a predetermined range of temperatures (greater than or equal to T2), wherein the predetermined range of temperatures comprises a range of temperatures operable to regenerate the particulate filter.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-3, 6, 7, and 9-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Araki in view of Maus (U.S. Patent 5,839,273).

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Re claims 1, 7, 9, and 13, as illustrated in Figures 1 and 3, Araki discloses an apparatus and a method for regenerating a particulate filter, the apparatus comprising:

- a catalyst (5);

- a first temperature sensor (25) operable to determine a first temperature (T_{in})

corresponding to a temperature of the catalyst and to transmit a first temperature signal as a function thereof;

- a particulate filter (4) thermally coupled with the catalyst (5);

- a hydrocarbon delivery system (6) operable to deliver unburned hydrocarbons to the catalyst as a function of a first control signal;

- a second temperature sensor (26) operable to determine a second temperature (T_a)

corresponding to a temperature of the particulate filter and to transmit a second temperature signal as a function thereof; and

- a regeneration controller (30) coupled with the first and second temperature sensors to receive the first and second temperature signals and coupled with the hydrocarbon delivery system, the regeneration controller operable to:

- determine if the first temperature (T_{in}) is above a first threshold temperature (T_1) (step 103);

- determine if the second temperature (T_a) is above a second threshold (T_2) (step 100);

- transmit a control signal to the hydrocarbon delivery system that is operable to:

- cause the hydrocarbon delivery system to deliver substantially unburned hydrocarbons to the catalyst when the first temperature is below the first threshold temperature (steps 103 with NO answer, 104, and 107);

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- cause the hydrocarbon delivery system to increase the quantity of unburned hydrocarbons delivered to the catalyst when the first temperature is above the first threshold temperature and the second temperature is below the second threshold (steps 103 with YES answer, 105-107, 109 with NO answer, and 111);

- cause the hydrocarbon delivery system to decrease the quantity of unburned hydrocarbons to the catalyst when the first temperature is above the first threshold temperature and the second temperature is above a third threshold (T2) ((steps 103 with YES answer, 105-107, 109 with YES answer, and 110), wherein the second threshold temperature comprises substantially the third threshold temperature.

Araki, however, fails to disclose that instead of delivering unburned hydrocarbons, the hydrocarbon delivery system to deliver substantially no unburned hydrocarbons to the catalyst when the first temperature is below the first threshold temperature.

As illustrated in the Figure and indicated in claims 8 and 13, Maus teaches a method to assist the regeneration of a soot filter (9) located downstream from an electrically heatable portion (3) and an oxidation catalyst (4), in which fuel (5) and air (6) are fed into the exhaust path only when a temperature in or near the electrically heatable portion reaches a predetermined value for the mixture of fuel and air to begin to burn in the oxidation catalyst. Otherwise, the fuel would be released unburned to the atmosphere if the temperature has not reached the predetermined value. It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have utilized the teaching by Maus in the apparatus and method of Araki, since the use thereof would have saved fuel and prevented the inadvertent release of harmful hydrocarbons to the atmosphere.

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Re claims 2, 10, and 15, in the modified apparatus and method of Araki, the first threshold temperature (T1) comprises a light-off temperature of the catalyst (5).

Re claims 3, 11, and 16, in the modified apparatus and method of Araki, the second threshold temperature (T2) comprises substantially a temperature operable to regenerate the particulate filter.

Re claims 6 and 12, in the modified apparatus of Araki, the hydrocarbon delivery system comprises a fuel injector.

Re claim 14, in the modified method of Araki, delivering unburned hydrocarbons to the catalyst comprises delivering a diesel fuel to the catalyst.

Allowable Subject Matter

6. Claims 4, 5, and 8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Prior Art

7. The IDS (PTO-1449) filed on March 4, 2004 has been considered. An initialized copy is attached hereto.

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure and consists of three patents and three patent applications: Sekiya et al. (U.S. Patent 5,207,990), Salvat et al. (U.S. Patent 6,412,276), Kuenstler et al. (U.S. Patent 6,594,990), Terada et al. (U.S. Patent Application 2003/0046929), Imai et al. (U.S. Patent Application

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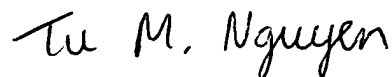
2004/0035101), and Schaller et al. (U.S. Patent Application 2004/0074225) further disclose a state of the art.

Communication

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Tu Nguyen whose telephone number is (703) 308-2833.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Thomas E. Denion, can be reached on (703) 308-2623. The fax phone number for this group is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-1148.



TMN

Tu M. Nguyen

May 30, 2004

Patent Examiner

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